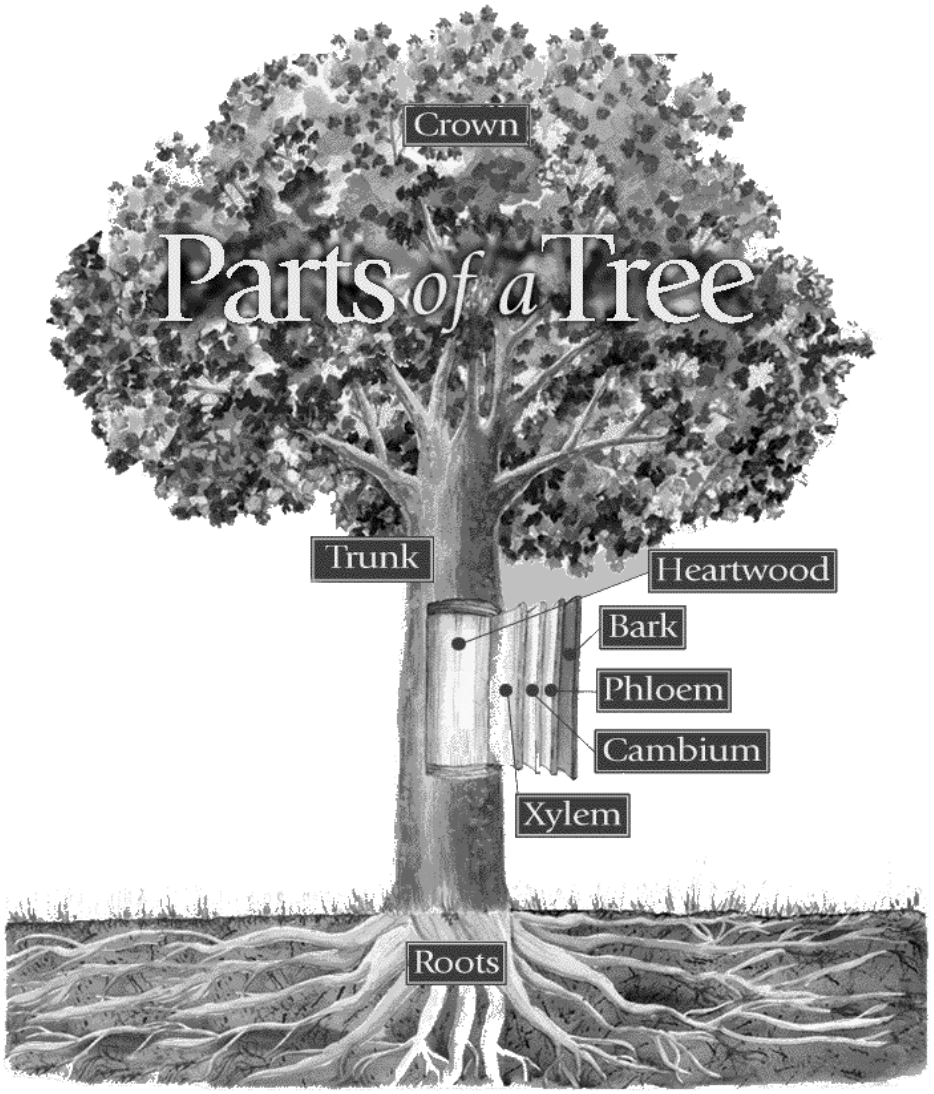
Parts Of A Tree



A tree is a woody plant that usually is more than 10 feet tall and has one main stem. Although trees come in different shapes and sizes, each have the same basic parts. Each of these parts - from the highest leaves in the crown to the tiny root hairs buried in the soil - play an important role in the tree's function and survival. The ***Crown*** of the tree is made up of the leaves and branches. The ***Trunk*** of the tree supports the crown and serves as a highway for food made in the leaves to travel to the roots and for water and nutrients from the roots to travel to the leaves. The ***Heartwood*** of the tree develops as the tree gets older. It is old sapwood that no longer carries sap, and gives the trunk support and stiffness. In many kinds of trees, the heartwood is a darker color than the sapwood, since its water-carrying tubes get clogged up. The ***Cambium*** is a layer or zone of cells, one cell thick, inside the inner bark. The cambium produces both the xylem and phloem cells. This is where diameter growth occurs, and where rings and inner bark are formed. In the ***Xylem*** (sapwood) layer, tree sap (water plus nitrogen and mineral nutrients) is carried back up from the roots to the leaves. In the ***Phloem*** (inner bark) layer, sugar that is made in the leaves or needles, is carried down to the branches, trunks, and roots, where it is converted into the food (starch) the tree needs for growth. The ***Bark*** layer protects the tree from insects and disease, excessive heat and cold, and other injuries. The ***Roots*** of the tree support the trunk and crown, and also anchor the tree in the soil. They serve as a storage facility during the winter for the food produced by the leaves during the growing season. The roots also absorb water and nutrients from the soil for use by the tree.

Tree Factory

Getting Ready

Write the following parts of a tree on separate slips of paper and put them in a sack. (There are enough parts for a group of 30 students. However, you may need to adjust the numbers depending on the size of your group.)

Heartwood	(1)
Sapwood	(3)
Taproot	(1)
Laterial roots	(2)
Cambium	(5)
Phloem	(6)
Bark	(8)
Leaves	(4)

Afterward, make four branches for your tree by cutting yarn or string into four 6-foot lengths. Then find a large, open area where the students can build the tree.

Tell the students that they're going to create a tree by acting out the tree parts they just discussed. Have each student pick one slip of paper to find out what role to play in the tree.

Ask students what makes up the center of the tree and gives the tree strength? (***heartwood***) The student portraying heartwood should stand in the center of an open area, tighten their muscles and chant, "I support; I support."

Ask students what tree part transports water to all parts of the tree? (***sapwood***) Have the sapwood students join hands to form a small circle around the heartwood. Have these students chant, "Gurgle, slurp. Gurgle slurp. Transport water," as they raise their joined hands up and down.

Ask students where does the water in the sapwood come from? (***it's absorbed by the roots***) Then have the taproot sit down with his or her back against the sapwood, and have the lateral roots lie down on the ground with their feet toward the sapwood and their arms and fingers spread out to represent root hairs. Have the roots make sucking noises.

Ask students where does the water in the sapwood travel to? (***to the leaves***) Then have the heartwood hold the ends of the yarn or string you cut earlier. Give the other end to a different student who represents leaves. Ask the leaves what they do all day (***make food through photosynthesis***). Have the leaves flutter their hands and chant, "We make food; we make food."

Ask the leaves what happens to all the food they make using sunlight, air, and water. (***It gets transported to the rest of the tree.***) Ask everyone what part of the tree transports the food from the leaves to the rest of the tree. (***phloem***) Have the phloem students join hands and form a large circle around the tree. Then have them simulate the role of the phloem by reaching above their heads and grabbing (***for food***), and then squatting and opening their hands (***releasing the food***) while chanting, "Food to the tree!"

Ask students if they've left out an important part of the tree. What layer produces new sapwood and phloem to keep the tree growing and healthy? (***cambium***) Have the cambium students form a circle between the sapwood and the phloem. Tell them to sway from side to side and chant, "New phloem, sapwood, and cambium."

Ask students what final component of their tree is missing—it's something that protects the tree. (***bark***) Have the bark students lock arms and form a circle that faces out from the center of the tree. Ask them to look tough. Have them march in place chanting, "We are bark. Please keep out."

When the tree is completely assembled, have all students act out and chant their parts simultaneously. If you want, you can end the session by telling the students their tree is old and falls over. Let everyone carefully fall down.

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